DOCUMENT RESUME

ED 275 351 JC 860 529

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TITLE The Effectiveness of New-Student Basic Skills Assessment in Colorado Community Colleges.
INSTITUTION Colorado State Board for Community Colleges and Occupational Education, Denver.
PUB DATE Sep 86
NOTE 33p.; Report prepared by the Assessment and Basic Skills Committee.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Statistical Data (110) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; *Academic Advising; *Academic Persistence; Basic Skills; Community Colleges; Educational Diagnosis; Educational Testing; Predictive Measurement; Program Effectiveness; Questionnaires; State Surveys; *Student Evaluation; *Student Placement; Two Year Colleges; *Two Year College Students
IDENTIFIERS *Colorado

ABSTRACT

In fall 1985, a study was conducted by the Colorado State Board for Community Colleges and Occupational Education to analyze the efficiency and effectiveness of community college assessment programs throughout the state. Each community college in the state randomly selected 100 students whose basic skills had been assessed and who had enrolled in fall 1985, and submitted information about the students' test scores, enrollment patterns, academic success, and persistence. Study findings included the following: (1) students who followed the advice given to them by counselors regarding mathematics, English, and reading course placement tended to succeed to a significantly higher degree than those who did not; (2) among students who followed counselors' advice, 64% succeeded in developmental mathematics, 76% succeeded in college math, 66% succeeded in pre-college English, and 82% succeeded in college-level English; (3) of the total number of cases examined, 73% followed counselors' advice and succeeded in the recommended courses; (4) 15% followed counselors' advice, but did not succeed; (5) 5.9% did not follow counselors' advice, and did not succeed; (6) 6.5% did not follow counselors' advice, but succeeded anyway; and (7) 78% of the students re-enrolled the following semester. Based on study findings, it was concluded that the current new-student assessment and advising programs were effective. (LAL)

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ED275351

THE EFFECTIVENESS OF NEW-STUDENT BASIC SKILLS ASSESSMENT IN COLORADO COMMUNITY COLLEGES

presented to

THE STATE BOARD FOR COMMUNITY COLLEGES
AND OCCUPATIONAL EDUCATION

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by

The Assessment and Basic Skills Committee
Russell DeVriendt, Chairman
September, 1986

Report Prepared by
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Statistician

JC 860 529

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INTRODUCTION

In 1984 the State Board for Community Colleges and Occupational Education (SBCCOE) adopted a policy which requires that colleges establish "assessment testing of all first-time students requesting enrollment in approved programs...." This policy (BP 9-41) also directed colleges to "set minimum competency standards in mathematics, writing, study skills and reading...." To ensure that the policy was being implemented, State Board staff organized a statewide Assessment and Basic Skills Committee to monitor the development of testing and developmental education programs and to report annually on statewide progress.

The Committee's first report (March, 1985) reviewed the status of community college assessment programs throughout the state and the cost of administering these programs. The Committee was asked at that time to continue its review of testing programs in the form of an analysis of efficiency and effectiveness. This report, then, is a summary of findings based on random samples of 100 Fall, 1985 assessed and enrolled students at Colorado community colleges; the study analyzes academic success and presistence of those students.

REASEARCH DESIGN

Each community college randomly selected 100 students who had been assessed and enrolled for Fall, 1985. Both demographic and test data were recorded on a common format (Attachment 1) but only test data were analyzed. The basic hypothosis of the study was that new students who followed the advice of counselors (including test result interpretation) would be more likely to succeed academically and re-enroll (persist) than those who did not follow such advice. Normally, researchers establish a 50% level for success and persistence in this type of study but, based on results of a pilot study, the Committee predicted a 60% success and persistence rate for those students who follow advice.

Data collected on each student in the random sample included basic skills assessment scores which place students at "developmental" or "college" levels in mathematics, writing, and reading. Study skills test data were not included in this study because the Committee felt that the analysis of such data would not signifcantly contribute to overall results. In the areas of writing and mathematics, the term "college level' refers to that course in the curriculum which transfers to senior institutions and "developmental", to any course below that level. "College level" reading skills were set at the 10th grade level because readability studies conducted at several colleges have determined that most freshman-level textbooks are written at the 10th level or higher.

Once these skill levels had been recorded for the entire random sample, they were correlated with academic success (a grade of C or higher for the recommended course), and persistence (enrollment for the subsequent academic term). The Committee also predicted, based on experience with the pilot study, that there would be a strong positive correlation between academic success and persistence.

RESULTS

Taken as a whole, the data suggests that students who follow the advice given them by counselors tend to succeed to a significantly higher degree than those students who do not follow the recommended advice. That is, for the number of cases submitted by various community colleges in the state, 64% of those students who followed advice in taking Developmental Mathematics did indeed succeed; for students who enrolled in College Math the number who succeeded as a result of following advice was 76%; the number of students who succeeded as a result of following advice for both Pre-college English and College-level English was 66% and 82% respectively. Similarly, the percentages for those who succeeded after heeding advice in Reading followed the same pattern (Pre-college Reading = 62%; College reading = 87%). Taken as an overall average, then, the percentage of students who followed the advice of counselors in enrolling in recommended coursework and succeeded was approximately 73% of the total number of cases examined.

For those students who did not follow advice, and subsequently did not succeed, the percentage was 5.9% of the total number of cases. Correspondingly, the percentage of students who followed advice but did not succeed was 15%. Finally, the average percentage of students who did not follow advice but succeeded anyway was 6.5%.

Some further findings:

1. The majority of cases submitted by community colleges around the state were assigned to the "Followed Advice and Subsequently Succeeded" (Y Y) category (see accompanying tables). It is possible, therefore, that most students follow advice, and because of this do succeed in larger percentages than others.

2. For all community colleges, very few cases were assigned to any of the other three catefories, i.e. "Followed Advice and Did Not Succeed (Y N), "Did Not Follow Advice but Succeeded" (N Y), or "Did Not Follow Advice, and Did Not Succeed: (N N). This suggests that most students do follow advice, and then either succeed or fail as a result of that advice (88% of all students); only 11.6% of all students did not follow advice. These findings exceeded even the hopeful predictions of the committee (60% of these students who follow advice succeed) and indicate clearly that Colorado community colleges are providing excellent assessment programs for new students.

3. With regard to the persistence factor, out of 696 cases who reported either persisting or not persisting (subsequent enrollment at the institution), 78% of the cases persisted by enrolling the following semester.

Aggregate data on the relationship between following advice and academic success was also subjected to the Chi Square test of independence to verify statistically the hypothesis that there is a dependent relationship among the variables of following advice, academic success and persistence. Basically, the purpose of the Chi Square technique is to determine whether the relationship among variables could possibly occur by chance. The analysis of data in this study indicates that the probability of a random relationship among following advice, academic success and persistence is less than five in one thousand ($X = .005$). In other words, community college assessment programs have a very positive effect on student success and retention.

SUGGESTIONS FOR FUTURE STUDY

The Basic Skills and Assessment Committee feels that this year's effort to provide the Board with verifiable accountability data has been productive and that this study strongly supports the effectiveness of current new-

student assessment and advising programs, of developmental education and academic support systems throughout the state. As is often the case with studies of this type, however, there have been as many questions raised as answered and the Committee suggests that it continue to address those new questions. In particular, we suggest continued analysis of:

1. the bearing of age, gender and ethnicity on academic success and persistence;

2. the particular relationship among various reading skills and academic success;

3. that group of students in the study who did <u>not</u> follow advice yet succeeded and persisted;

4. the success and persistence of those students for whom assessment is waived (degree holders, college transfers, etc.); and,

5. the predictive nature and general value of study skills testing.

Perhaps the most interesting and potentially productive of these areas for further study is that group of students (40%-50% of the sample) who

succeeded in apparent contradiction of the general trend. There are several hypothses which the Committee considers worthy of investigation: 1) the effect of grade inflation, 2) effects of academic support services, 3) the possibility of erroneous placement, or 4) individual motivation. Any or all of these could influence the success or failure of the individual student as the literature in this area will readily support. The study of even one or two could yield valuable information for Colorado community colleges and provide strategies for improving services for all students.

APPENDICES

Attached are charts of frequencies and percentages and summary tables which may be helpful in visualizing the relationships among following advice, academic success and persistence.

Attachment
1. Data Gathering Form
2. Overall Percentage Summary
3. Success/Persistence Correlations
4. Math Success Chart
5. Math Persistence Chart
6. English Success Chart
7. English Persistence Chart
8. Reading Success Chart
9. Reading Persistence Chart
10. Statewide and By-College Persistence Frequencies and Percentages
11. Summary Statistics

Attachment 1

DATA GATHERING FORM
BASIC SKILLS ASSESSMENT ANALYSIS

COLLEGE: _____

NAME: _____ SSN: _____

AGE: _____ SEX (M/F): _____ PROGRAM/MAJOR: _____

ETHNICITY: ___ WHITE ___ HISPANIC ___ BLACK ___ ASIAN/PACIFIC ISLANDER
___ NATIVE AMERICAN ___ OTHER (list) _____

Native English Speaker? ____ Yes ____ No

If NO, what language spoken?: _____

U.S. Resident? ____ Yes ____ No If NO? resident of what country?: _____

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BASIC SKILLS TEST

Please circle the letter (Y=Yes; N=No) that bests applies

Section	Level	Follow Advice	Successful	Persisted
I. MATH:				
Developmental	____	Y N	Y N	
College	____	Y N	Y N	
Waiver	____	Y N	Y N	
II. ENGLISH				Y N
Pre-College	____	Y N	Y N	
College	____	Y N	Y N	
Waiver	____	Y N	Y N	
III. READING				
Pre-College	____	Y N	Y N	
College	____	Y N	Y N	
Waiver	____	Y N	Y N	

IV. STUDY SKILLS: (indicate total number of scores in each category below.)

Developmental _____
College _____
Waiver _____

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OVERALL SUMMARY

Followed Advice		Did Not Follow Advice	
Success	No Success	Success	No Success
82%	18%	55%	45%
Persisted	Did Not Persist	Persisted	Did Not Persist
75%	25%	59%	41%

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Attachment 3

SUCCESS/PERSISTENCE COMPARISONS

	Followed Advice		Did Not Follow Advice	
Math: Developmental				
	Succeed	64%	Succeed	11%
	Not Succeed	20%	Not Succeed	8%
	Persist	52%	Persist	14%
	Not Persist	22%	Not Persist	13%
Math: College				
	Succeed	76%	Succeed	1%
	Not Succeed	20%	Not Succeed	2%
	Persist	70%	Persist	2%
	Not Persist	25%	Not Persist	3%
English: Developmental				
	Succeed	66%	Succeed	12%
	Not Succeed	18%	Not Succeed	8%
	Persist	51%	Persist	14%
	Not Persist	20%	Not Persist	13%
English: College				
	Succeed	82%	Succeed	2%
	Not Succeed	13%	Not Succeed	2%
	Persist	80%	Persist	4%
	Not Persist	19%	Not Persist	5%
Reading: Developmental				
	Succeed	62%	Succeed	15%
	Not Succeed	15%	Not Succeed	9%
	Persist	43%	Persist	29%
	Not Persist	17%	Not Persist	10%
Reading: College				
	Succeed	87%	Succeed	1%
	Not Succeed	8%	Not Succeed	5%
	Persist	72%	Persist	4%
	Not Persist	19%	Not Persist	5%

Community College of Denver
Office of Institutional Research

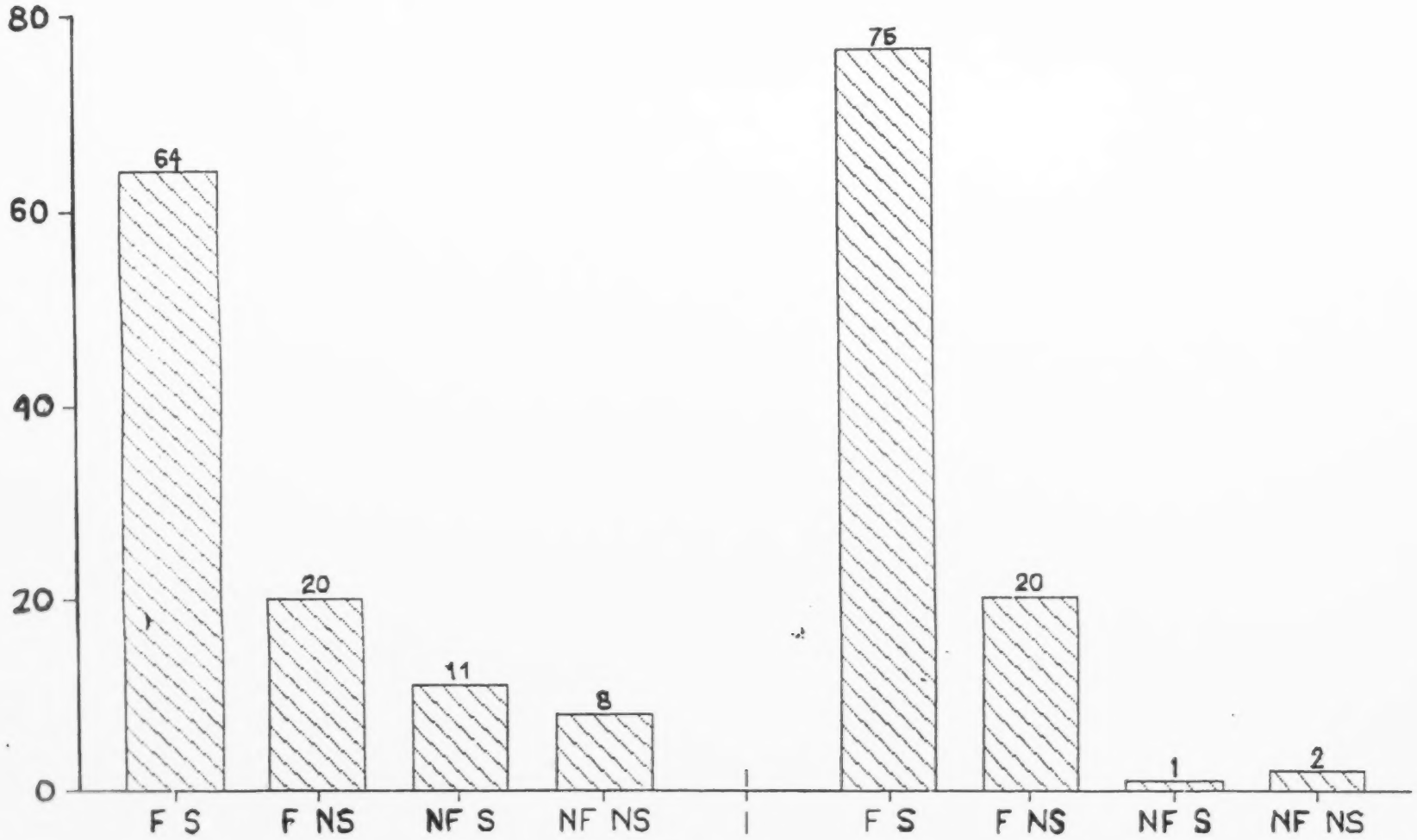
Attachment 3

SUMMARY, BY AREA OF INSTRUCTION

	Followed Advice	Did Not Follow Adv
Math		
Success	78%	54%
Non-success	22%	46%
Persistence	72%	50%
Non-persist	28%	50%
English		
Success	85%	57%
Non-success	15%	43%
Persistence	79%	54%
Non-persist	21%	46%
Reading		
Success	86%	55%
Non-success	14%	45%
Persistence	75%	70%
Non-persist	25%	30%

Math: Success

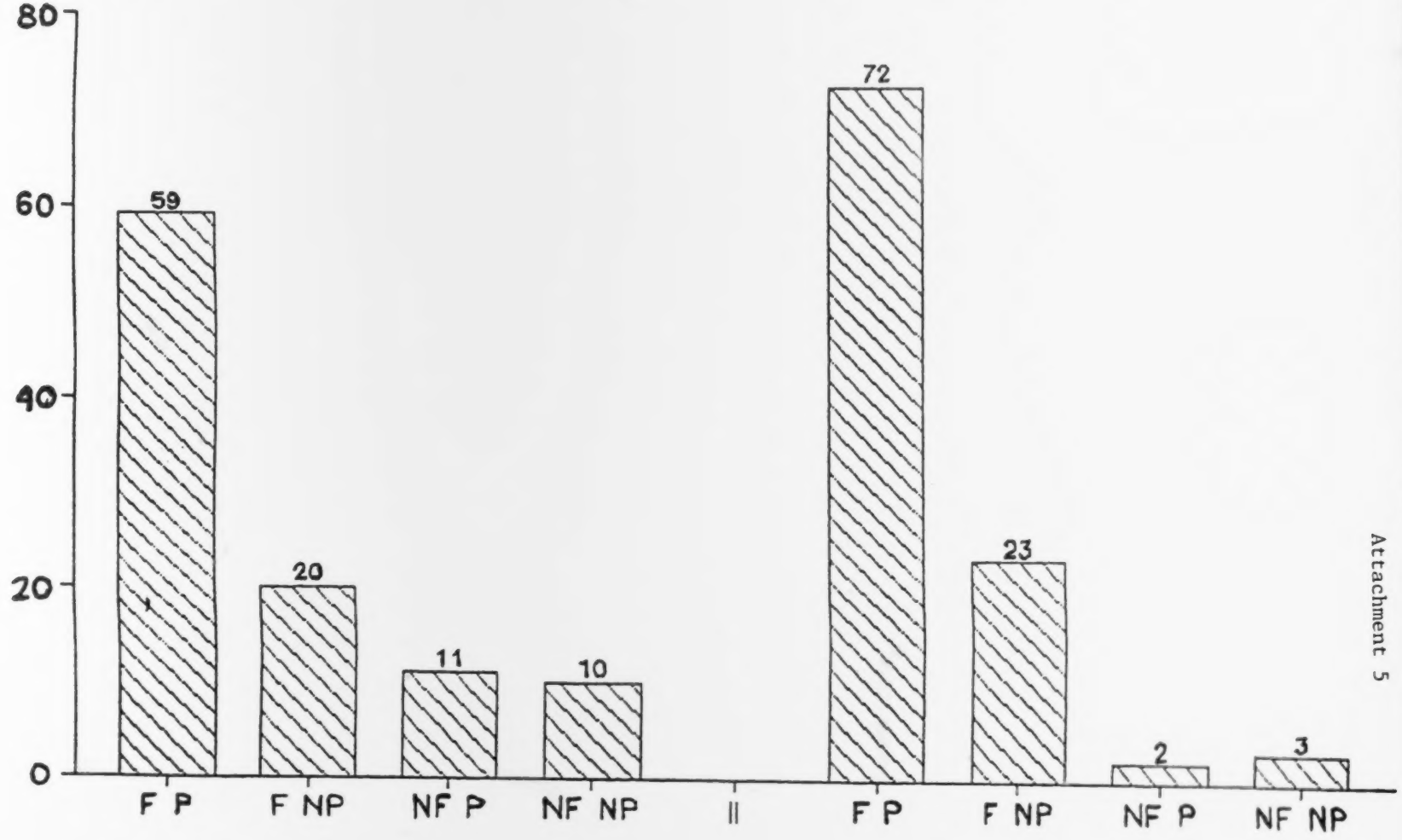
Developmental and College



ATTACHMENT 4

Math: Persistence

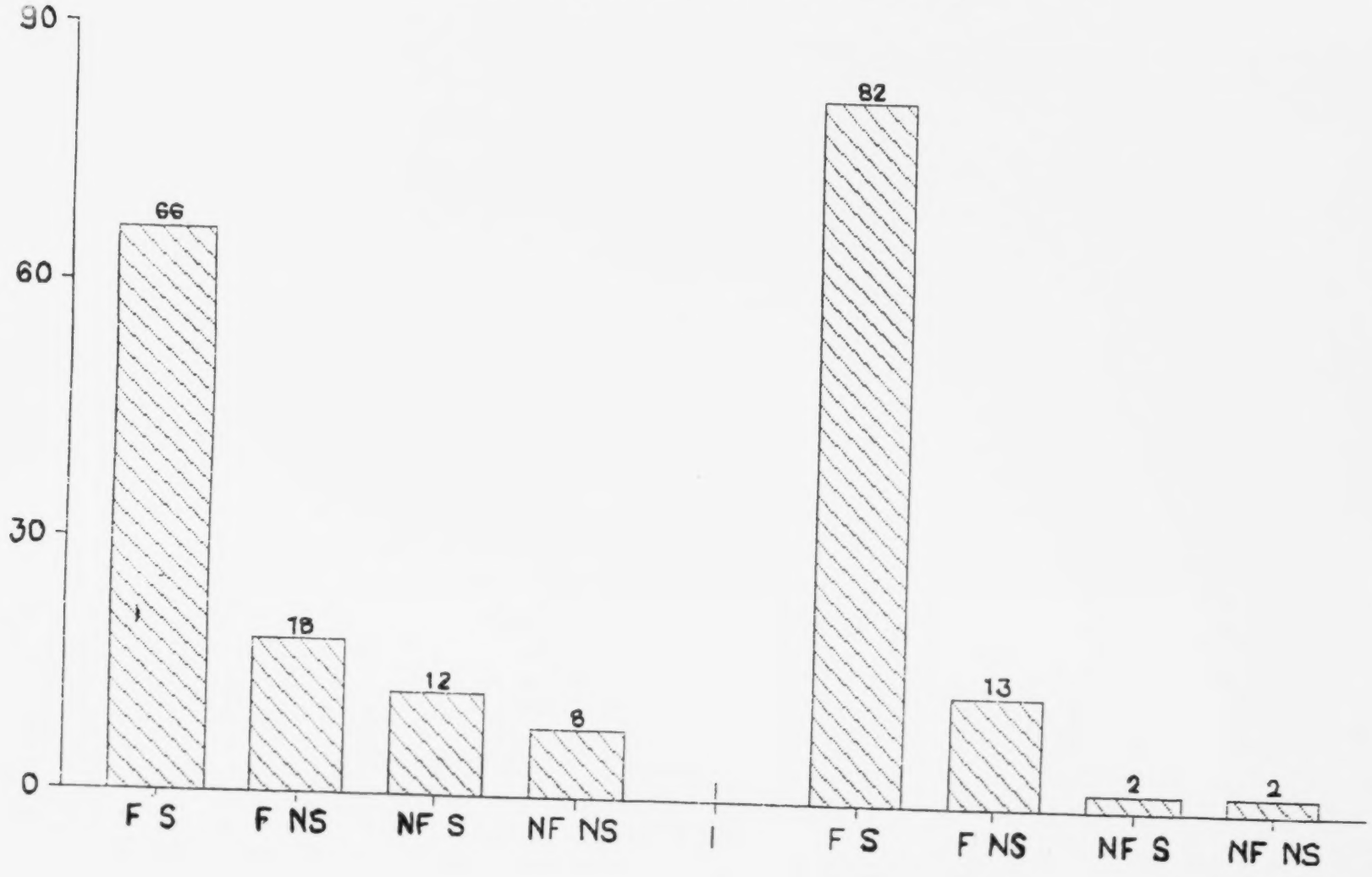
Developmental and College



Attachment 5

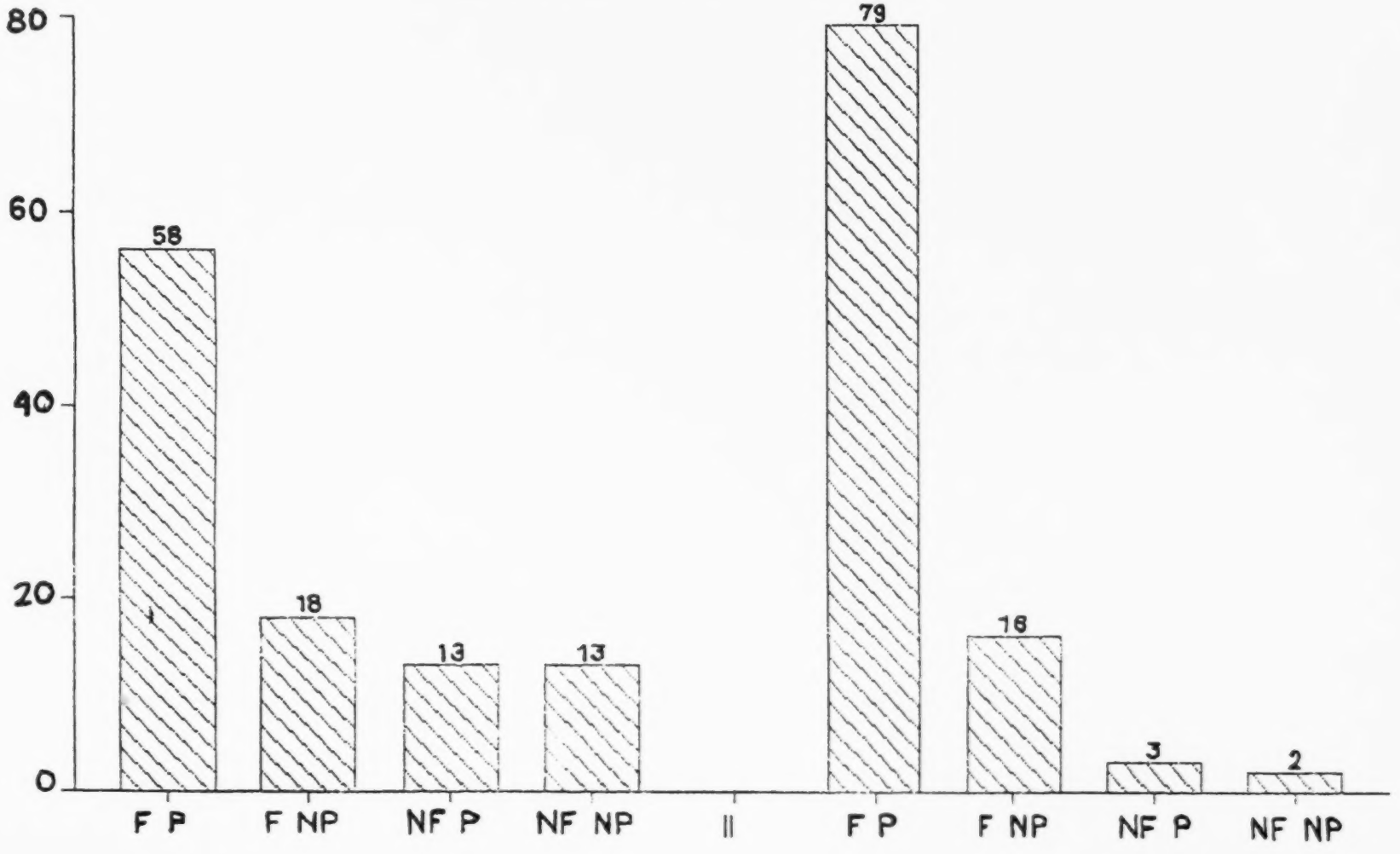
English: Success

Developmental and College



English Persistence

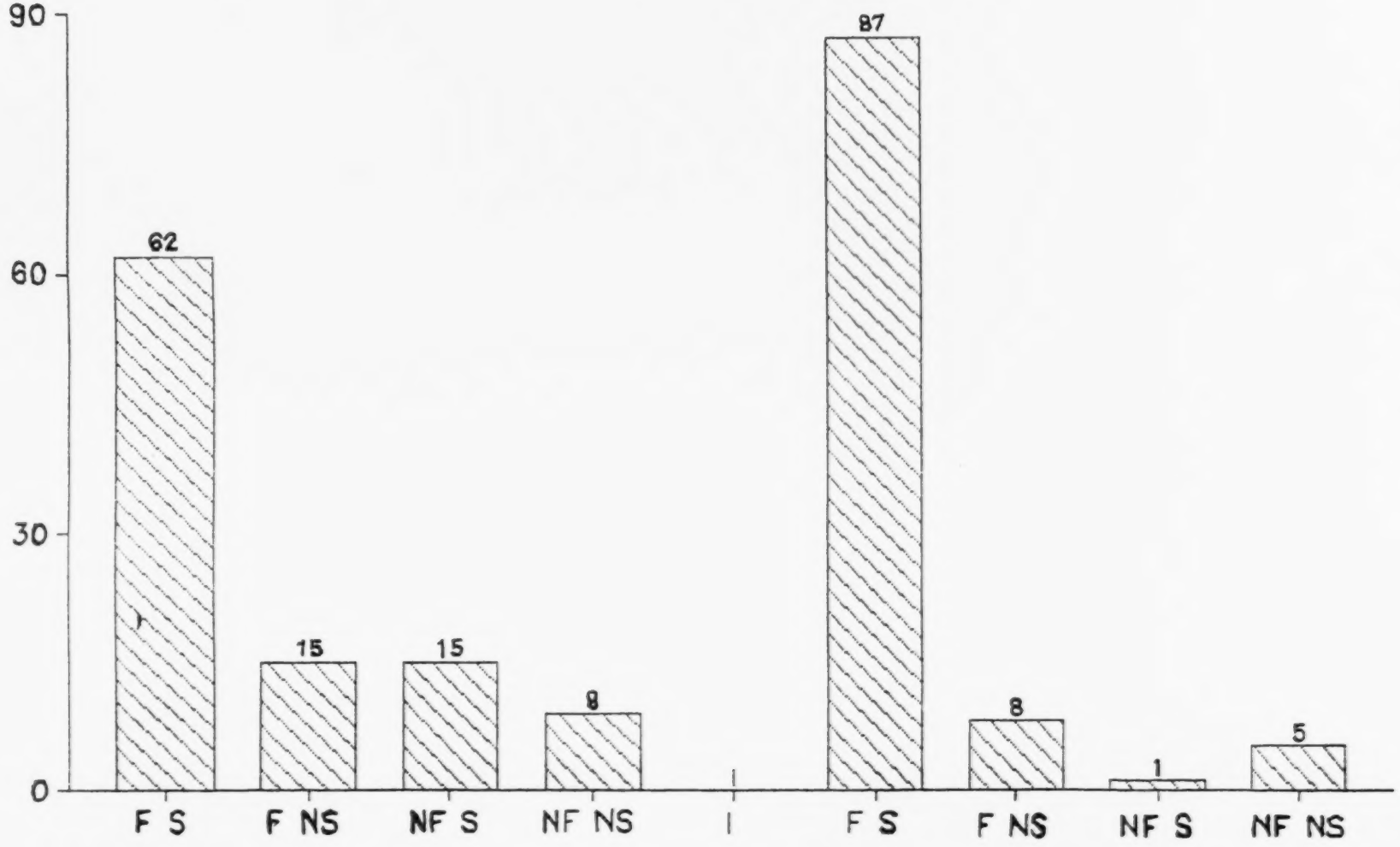
Developmental and College



ATTACHMENT 7

Reading: Success

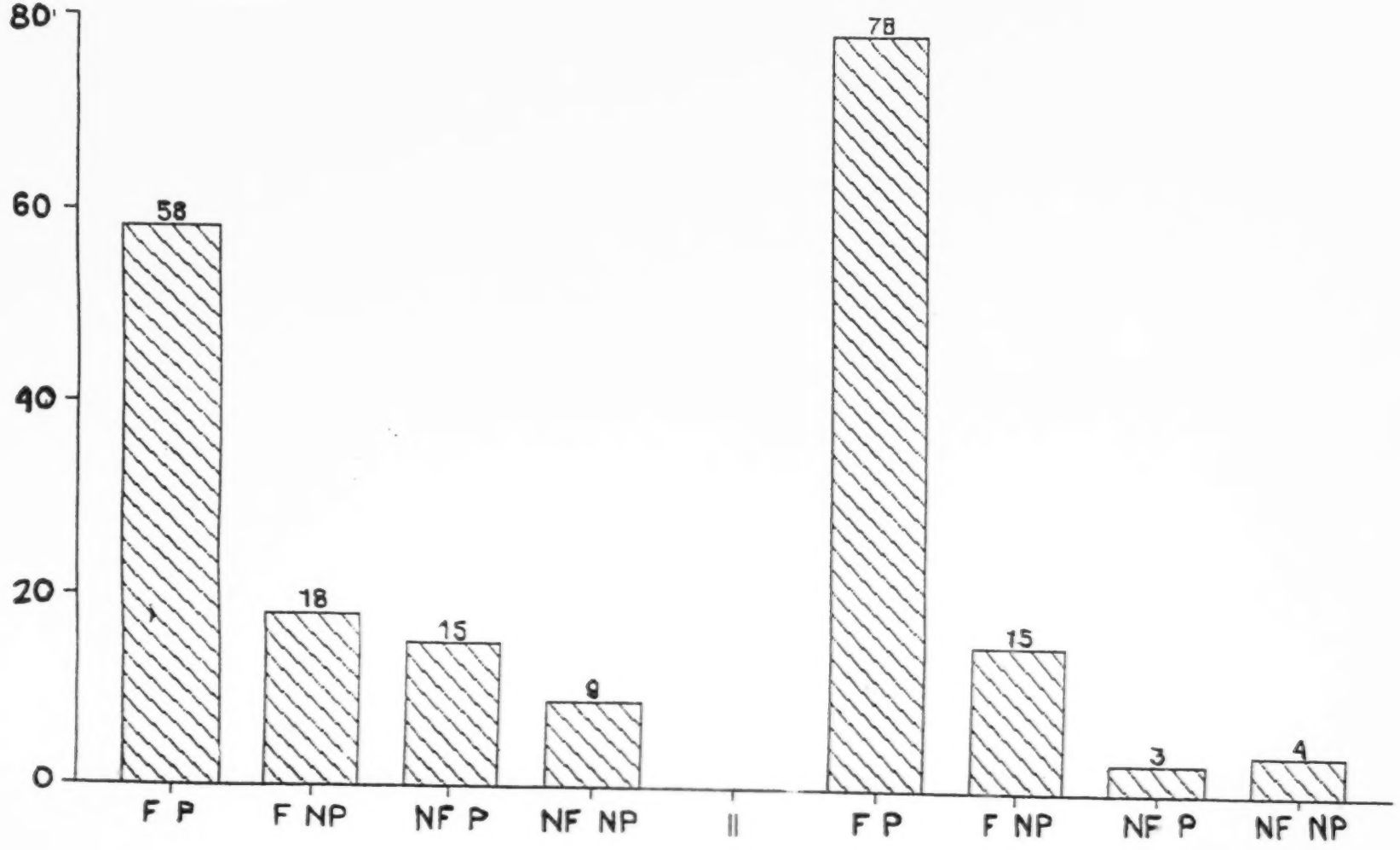
Developmental and College



ATTACHMENT 8

Reading Persistence

Developmental and College



ATTACHMENT 9

filename: mdstats.all

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Math: Developmental

College	Followed Advice/ Persisted No.	Followed Advice/ Persisted Percent	Followed Advice/ Did Not Persist No.	Followed Advice/ Did Not Persist Percent	Not Foll. Adv./ Persisted No.	Not Foll. Adv./ Persisted Percent	Not Foll. Adv./ Did Not Persist No.	Not Foll. Adv./ Did Not Persist Percent	
Aims C.C.	7	36.80	11	57.90	0	.00	1	5.30	
Arapahoe C.C.	25	78.10	1	3.10	6	18.80	0	.00	
C.C. Denver	27	49.10	10	18.20	7	12.70	11	20.00	
TEC	68	88.30	9	11.70	0	.00	0	.00	
Front Range C.C.	10	52.60	8	42.10	0	.00	1	5.30	
Lamar C.C.	6	23.00	6	23.00	4	15.00	10	39.00	
Morgan C.C.	4	17.30	0	.00	16	69.70	3	13.00	
Northwestern C.C.	3	18.60	7	43.80	1	6.30	5	31.30	
Otero C.C.	7	77.80	1	11.10	1	11.10	0	.00	
Pikes Peak C.C.	22	73.40	7	23.30	1	3.30	0	.00	
Pueblo C.C.	30	93.70	2	6.30	0	.00	0	.00	
Red Rocks C.C.	5	29.40	9	52.90	2	11.80	1	5.90	
Trinidad St. C.C.	5	33.30	3	20.00	2	13.30	5	33.30	
TOTALS	219		74		40		37		370
Percent. of Total	59.19		20.00		10.81		10.00		100

Total N: 370

Math: College

College	Followed Advice/ Persisted No.	Followed Advice/ Persisted Percent	Followed Advice/ Did Not Persist No.	Followed Advice/ Did Not Persist Percent	Not Foll. Adv./ Persisted No.	Not Foll. Adv./ Persisted Percent	Not Foll. Adv./ Did Not Persist No.	Not Foll. Adv./ Did Not Persist Percent	
Aims C.C.	54	77.10	14	20.00	0	.00	2	2.90	
Arapahoe C.C.	2	50.00	0	.00	2	50.00	0	.00	
C.C. Denver	11	78.60	1	7.10	0	.00	2	14.30	
TEC	22	100.00	0	.00	0	.00	0	.00	
Front Range C.C.	6	50.00	5	41.70	0	.00	1	8.30	
Lamar C.C.	45	84.90	8	15.10	0	.00	0	.00	
Morgan C.C.	4	17.40	16	69.50	0	.00	3	13.10	
Northwestern C.C.	11	78.30	1	7.10	2	12.50	0	.00	
Otero C.C.	5	71.40	2	28.60	0	.00	0	.00	
Pikes Peak C.C.	0	.00	0	.00	0	.00	0	.00	
Pueblo C.C.	3	75.00	1	25.00	0	.00	0	.00	
Red Rocks C.C.	7	77.80	2	22.20	0	.00	0	.00	
Trinidad St. C.C.	30	67.00	14	31.00	1	2.00	0	.00	
TOTALS	200		64		5		8		277
Percent of Total	72.20		23.10		1.81		2.89		100

ATTACHMENT 10

Reading: Developmental

College	Followed Advice/ Persisted No.	Followed Advice/ Persisted Percent	Followed Advice/ Did Not Persist No.	Followed Advice/ Did Not Persist Percent	Not Foll. Adv./ Persisted No.	Not Foll. Adv./ Persisted Percent	Not Foll. Adv./ Did Not Persist No.	Not Foll. Adv./ Did Not Persist Percent
Aims C.C.	7	36.80	11	57.90	0	.00	1	5.30
Arapahoe C.C.	7	50.00	3	21.40	4	28.60	0	.00
C.C. Denver	19	51.35	2	5.41	9	24.32	7	18.92
TEC	47	87.00	7	13.00	0	.00	0	.00
Front Range C.C.	3	42.90	1	14.30	2	28.60	1	14.20
Lamar C.C.	21	50.00	10	23.80	2	4.80	9	21.40
Morgan C.C.	5	20.80	1	4.20	16	66.60	2	8.40
Northwestern C.C.	9	64.30	1	7.10	3	21.50	1	7.10
Otero C.C.	5	83.30	1	16.70	0	.00	0	.00
Pikes Peak C.C.	15	78.90	4	21.10	0	.00	0	.00
Pueblo C.C.	5	83.30	1	16.70	0	.00	0	.00
Red Rocks C.C.	0	.00	2	50.00	1	25.00	1	25.00
Trinidad St. C.C.	1	33.30	1	33.30	1	33.30	0	.00
TOTALS	144		45		38		22	
PERCENT OF TOTAL N	57.83		18.07		15.26		8.84	

Total N: 249

Reading: College

College	Followed Advice/ Persisted No.	Followed Advice/ Persisted Percent	Followed Advice/ Did Not Persist No.	Followed Advice/ Did Not Persist Percent	Not Foll. Adv./ Persisted No.	Not Foll. Adv./ Persisted Percent	Not Foll. Adv./ Did Not Persist No.	Not Foll. Adv./ Did Not Persist Percent
Aims C.C.	51	71.80	15	21.20	1	1.40	4	5.60
Arapahoe C.C.	3	50.00	1	16.70	1	16.60	1	16.70
C.C. Denver	0	.00	0	.00	0	.00	0	.00
TEC	43	95.50	2	4.50	0	.00	0	.00
Front Range C.C.	3	42.90	1	14.30	2	28.60	1	14.20
Lamar C.C.	26	86.70	4	13.30	0	.00	0	.00
Morgan C.C.	15	75.00	4	20.00	0	.00	1	5.00
Northwestern C.C.	0	.00	0	.00	1	100.00	0	.00
Otero C.C.	0	.00	0	.00	0	.00	0	.00
Pikes Peak C.C.	0	.00	0	.00	0	.00	0	.00
Pueblo C.C.	3	75.00	1	25.00	0	.00	0	.00
Red Rocks C.C.	1	50.00	1	50.00	0	.00	0	.00
Trinidad St. C.C.	0	.00	0	.00	0	.00	0	.00
TOTALS	145		29		5		7	
PERCENT OF TOTAL N	77.96		15.59		2.69		3.76	

ATTACHMENT 10

English: Developmental

College	Followed Advice/ Persisted No.	Followed Advice/ Persisted Percent	Followed Advice/ Did Not Persist No.	Followed Advice/ Did Not Persist Percent	Not Foll. Adv./ Persisted No.	Not Foll. Adv./ Persisted Percent	Not Foll. Adv./ Did Not Persist No.	Not Foll. Adv./ Did Not Persist Percent	
Aims C.C.	6	31.60	11	57.90	0	.00	2	10.50	
Arapahoe C.C.	13	52.00	6	24.00	6	24.00	0	.00	
C.C. Denver	42	53.85	10	12.80	12	15.80	14	17.90	
TEC	40	85.10	1	2.10	0	.00	6	12.80	
Front Range C.C.	3	42.90	1	14.30	2	28.60	1	14.20	
Lamar C.C.	8	36.30	6	27.30	4	18.20	4	18.20	
Morgan C.C.	5	50.00	1	10.00	4	40.00	0	.00	
Northwestern C.C.	14	40.00	11	31.40	6	17.20	4	11.40	
Otero C.C.	2	25.00	3	37.50		12.50	2	25.00	
Pikes Peak C.C.	30	76.90		20.50	0	.00	1	2.60	
Pueblo C.C.	22	95.70	1	4.30	0	.00	0	.00	
Red Rocks C.C.	2	13.30	8	53.40	4	26.70		6.60	
Trinidad St. C.C.	1	5.80	2	11.80	4	23.50	10	58.80	
TOTALS	188		61		42		44		335
PERCENT OF TOTAL N	56.12		18.21		12.54		13.13	14.83	

Total N: 249

English: College

College	Followed Advice/ Persisted No.	Followed Advice/ Persisted Percent	Followed Advice/ Did Not Persist No.	Followed Advice/ Did Not Persist Percent	Not Foll. Adv./ Persisted No.	Not Foll. Adv./ Persisted Percent	Not Foll. Adv./ Did Not Persist No.	Not Foll. Adv./ Did Not Persist Percent	
Aims C.C.	52	73.20	5	21.20	1	1.40	3	4.20	
Arapahoe C.C.	28	87.50	1	31.20	2	6.10		31.20	
C.C. Denver	2	66.60	0	.00	1	33.40	0	.00	
TEC	6	.00	0	.00	0	.00	0	.00	
Front Range C.C.	4	40.00	5	50.00	1	10.00	0	.00	
Lamar C.C.	44	72.10	14	23.00	1	1.60	2	3.30	
Morgan C.C.	30	88.20	4	11.80	0	.00	0	.00	
Northwestern C.C.	3	60.00	1	20.00	1	20.00	0	.00	
Otero C.C.	5	71.40	2	28.60	0	.00	0	.00	
Pikes Peak C.C.	4	57.10	3	42.90	0	.00	0	.00	
Pueblo C.C.	7	100.00	0	.00	0	.00	0	.00	
Red Rocks C.C.	7	77.80	2	22.20	0	.00	0	.00	
Trinidad St. C.C.	46	76.70	12	20.00	2	3.30	0	.00	
TOTALS	238		49		9		5		301
PERCENT OF TOTAL N	79.07		16.28		2.99		1.66		100

Basic Skills Assessment: Summary Statistics

Comm. College	Math Dev. Y Y	Y N	N Y	N N	Math Coll Y Y	Y N	N Y	N N	Eng Pre Y Y	Y N	N Y	N N	Eng Coll Y Y	Y N	N Y	N N	Rdg. Pre Y Y	Y N	N Y	N N	Rdg. Coll Y Y	Y N	N Y	N N	Per-sist. Y	N	Totals (all subjs.)
AimsCC	13	4	0	2	58	10	0	2	13	0	4	2	60	7	0	4	16	2	0	1	59	7	0	5	62	30	269
Arapahoe	21	5	6	0	2	0	2	0	12	7	5	1	27	2	2	1	7	3	3	1	3	1	1	1	65	9	113
CCD	62	12	5	8	26	3	1	2	24	4	8	4	34	3	1	2	19	2	12	4	29	0	0	0	54	24	265
TBC	72	5	0	0	22	0	0	0	40	1	0	6	6	0	0	0	49	5	0	0	45	0	0	0	30	9	251
CHtnColl	64	10	0	0	26	8	0	0	85	6	0	0	23	1	0	0	52	6	0	0	4	0	0	0	NA	NA	285
FrontRang	15	3	0	1	8	3	0	1	10	1	1	1	7	2	0	1	3	1	0	3	0	0	0	0	23	1	61
LamarCC	3	9	7	7	39	15	0	0	8	6	5	3	44	14	2	1	20	11	4	7	30	0	0	0	64	22	284
MorganCC	9	1	18	1	13	0	0	0	4	0	4	2	34	0	0	0	5	1	17	1	19	0	0	1	53	9	124
NorthWest	8	2	1	5	10	2	0	2	19	6	6	4	3	1	0	0	8	2	0	4	1	0	0	1	36	15	85
PikesPeak	22	7	0	1	0	0	0	0	29	9	0	1	5	2	0	0	14	5	0	0	0	1	0	0	43	10	96
PuebloCC	25	7	0	0	3	1	0	0	21	2	0	0	6	1	0	0	5	1	0	0	1	3	0	0	38	4	76
Otero	4	4	0	1	5	2	0	0	4	1	0	3	8	5	0	0	5	1	0	0	0	0	0	0	22	8	43
RedRocks	5	9	3	0	5	4	0	0	4	6	3	2	5	2	2	1	1	1	0	2	1	1	0	0	20	14	66
Trinidad	4	4	1	6	33	11	1	0	3	0	7	7	48	10	2	0	1	1	1	0	0	0	0	0	69	6	140
Totals	321	82	41	32	243	59	4	7	276	49	43	36	310	50	9	9	205	42	37	23	192	13	1	8	634	161	2098
SubjTots	476				319				404				378				307				214				795		
Percent	83.	21.	11.	8.2	84.	20.	1.3	2.4	77.	14.	12.	10.	83.	13.	2.4	2.4	81.	17.	15.	9.1	114	7.7	.59	4.7	91.	23.	

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ATTACHMENT 11